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ABSTRACT

In 2000, the Finance Project received a planning grant to launch a new initiative on financing professional development in education. This report contributes to the understanding of resources required to successfully implement, replicate, or scale up professional development initiatives. The first section examines what preservice and inservice teacher preparation and professional development look like. The second section focuses on understanding the costs of preservice and inservice professional development, including personnel costs; facilities, materials, and equipment; travel and transportation; and research, development, and dissemination. It also looks at distribution of the cost burden. The third section presents directions for future work, including: expanding the cost framework to other educators, making the cost framework more seamless, applying the cost framework, exploring economic trade-offs, and comparing professional development investments with other fields. (Contains 25 references.) (SM)

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COST FRAMEWORK FOR TEACHER PREPARATION AND PROFESSIONAL DEVELOPMENT

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COST FRAMEWORK FOR TEACHER PREPARATION AND PROFESSIONAL DEVELOPMENT

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PREFACE

Professional development – including both pre-service and in-service training – is a critical component of the nation's effort to improve schools and student achievement. Key to ensuring that teachers, principals, and other educators have the knowledge and skills they need to meet the challenges of today's classrooms is ensuring that they have access to sustained, intensive professional development. Financing directly affects what professional development takes place, how it is made available, who participates, who pays, and what impacts it has. Thus, improving professional development in education will depend on better information about what various models of professional development cost, how cost-effective those investments are, what resources are available to finance professional development, and how financing strategies can help achieve education reform goals. It will also depend on an assessment of whether efforts to improve professional development could be enhanced by changing the ways in which it is financed.

To begin to address these issues, in April 2000 The Finance Project received a planning grant from the Ford Foundation to launch a new initiative on financing professional development in education. The Finance Project is a nonprofit policy research and technical assistance organization whose mission is to support decision making that produces and sustains good results for children, families, and communities by developing and disseminating information, knowledge, tools, and technical assistance for improved policies, programs, and financing strategies. Through research and development of tools and materials, The Finance Project continues to build its extensive body of knowledge and resources on how financing arrangements affect the quality and accessibility of education as well as other supports and services for children, families, and communities. The Finance Project also brokers information on financing issues and strategies to a broad array of audiences, and provides technical assistance to "reform ready" states and communities engaged in efforts to align their financing systems with their policy and program reform agendas.

The purposes of The Finance Project's Collaborative Research and Development Initiative on Financing Professional Development in Education are to:

- Create a better understanding of how much is spent on professional development in education and what those expenditures purchase
- Delineate how financing affects the quality and accessibility of professional development and the costs, cost burden, and cost-benefit of alternative approaches to the preparation and training of educators
- Develop new policy tools to help design and implement improved financing for professional development that is aligned with education reform strategies
- Develop a technical assistance capability to share information about financing issues and strategies and make technical resources available to state and local policy makers

and school officials who are engaged in efforts to reform financing for professional development.

During the planning phase of the initiative, The Finance Project began to identify and research critical issues in the financing of professional development in education by consulting with a wide array of relevant professional organizations, education researchers, advocates for teachers, principals, and other educators, higher education leaders, education reformers and professional development experts. Based on the input of these education leaders and with the oversight of an Advisory Group comprised of a diverse set of nationally-recognized education leaders, The Finance Project prepared the following series of products that lay the groundwork for further research, development, and technical assistance:

- *Profiles of Selected Promising Professional Development Initiatives*, which provides a base of program and financing information on 16 professional development reform efforts

- *Framing the Field: Professional Development in Context*, which examines what is known about effective professional development from both research and the profiles developed under this project

- *Cost Framework for Teacher Preparation and Professional Development*, which lays out a comprehensive framework for understanding the types and levels of resources involved in both pre-service and in-service professional development

- *Issues and Challenges in Financing Professional Development in Education*, which contrasts the financing strategies and challenges of new professional development initiatives with those embedded in traditional programs

- *Catalog and Guide to Federal Funding Sources for Professional Development in Education*, which identifies and analyzes 96 federal programs that can be used to fund professional development in education.

Each of these products adds to The Finance Project's working paper series on issues, options, and strategies for improving the financing of education, family and children's services, and community development. Each reflects the views and interpretations of its author or authors, and may lead to further exploration or refinement over time. Together, these products highlight the changing conceptualization of effective professional development in education and the array of promising new approaches that are emerging. They also significantly contribute to an understanding of the salient issues in financing professional development—including cost, available resources, and strategies for matching resources with education goals. Finally, they point to multiple directions for further research, development, and technical assistance to help build the capacity needed to advance effective

reforms.

This paper, *Cost Framework for Teacher Preparation and Professional Development,* makes an important contribution to understanding the resources required to successfully implement, replicate, or scale up professional development initiatives. Prior to the development of this paper, there was no comprehensive framework for the cost elements that must be taken into consideration when planning and implementing such initiatives. By laying out and discussing each element of cost, this paper develops a framework that can guide decision makers as they think about the resources required to support both the preparation and continuing professional development of teachers.

This paper was commissioned from the author Jennifer King Rice by The Finance Project. Carol Cohen served as project manager. The author is grateful for the insightful comments of a number of individuals, including Carol Cohen, Cheryl Hayes, Randy Ross, David Monk, Jack Jennings, Eric Hirsch, Randy Hitz, Judith Renyi, and members of The Finance Project's Advisory Group to the Collaborative Initiative on Financing Professional Development in Education. The author claims responsibility for any remaining errors or oversights. I would like to thank all of these individuals for their contributions to the preparation of this paper.

Cheryl D. Hayes
Executive Director

INTRODUCTION

A great deal of attention among researchers, policy makers, and others interested in improving the quality of public education in the U.S. has focused on high quality teachers as a key to realizing success for all students. Better teachers, most would agree, lead to better learning. So, it is not surprising that the growing emphasis on high standards for student performance evident across the U.S. has triggered a movement to improve the quality of the teaching force. In particular, attention has focused on upgrading preparation programs for new teachers as well as inservice professional development opportunities for practicing teachers to enhance the human capital available in schools. This emphasis on improving the quality of teacher training is evident in the recent efforts of several research groups and organizations to better understand and define the characteristics of effective teacher preparation and professional development (The Holmes Group, 1986; National Partnership for Excellence and Accountability in Teaching, 1998; National Commission on Teaching and America' s Future, 1996; National Foundation for the Improvement of Education, 1996; Center for the Study of Teaching and Policy, 1998; American Council on Education, 1999). At the same time, efforts must also be made to reach a better understanding of what these sorts of activities cost. As with any type of intervention or reform, the ability of schools, school systems, universities, and other organizations to adopt and implement high quality professional development programs depends in large part on the availability and allocation of appropriate resources to support the initiatives. A first step involves gaining a better understanding of what those resources are.

Currently, there is no comprehensive framework for the cost elements that must be taken into consideration when planning and implementing professional development initiatives. If initiatives are to find necessary resources, especially for replicating or scaling up existing small-scale successes, a complete understanding of the costs that must be covered is necessary. This paper considers the costs of professional development for teachers[1], with the ultimate goal of developing a cost framework to guide decision makers as they think about the resources required to support such initiatives. The paper takes an economic approach to cost analysis that recognizes the full opportunity cost of all resources devoted to the initiative.

A vexing difficulty associated with estimating the costs of education policies and programs is the hidden nature of many of the cost elements. The distinction between costs and expenditures is an important one. The total cost is the value of all resources that are required to accomplish the goals of an initiative, while expenditures are the monetary outlays associated with the initiative. Expenditures may overstate costs to the degree that more valuable resources are being used than necessary (e.g., over-qualified staffing). On the other hand, expenditures may understate costs to the extent that some resources necessary to meet the goals of the initiative are not associated with fiscal outlays. A key example related to

[1]While The Finance Project's Collaborative Research and Development Initiative on Financing Professional Development in Education is intended to be inclusive of multiple education professionals, for the purpose of this cost framework, we have focused on the professional development of teachers. Future work will attend to expanding the framework to include school principals and other professional educators.

teacher professional development is the uncompensated time that teachers and teacher candidates devote to their own professional development. Certainly, to the degree that these individuals are willing to donate their time, the overall price tag of the initiative will decrease. However, this time is still a cost, and must be considered as such. Likewise, to the degree that the cost burden is distributed in such a way that external sources of support cover substantial portions of the cost, the burden on the school or school system will decrease. However, the overall cost of the initiative remains unchanged. The point here is that the many hidden and widely dispersed costs embedded in teacher professional development initiatives must be recognized so that decision makers have a complete picture of the resources required to support the effort. The framework developed in this paper is intended to identify the full opportunity cost of teacher professional development in order to guide decision makers as they think about the array of resources needed to support such initiatives. Once the total cost is determined, decision makers can apply local conditions (e.g., the potential to reallocate time, the willingness of teachers to give of their time, the availability of external support) to assess the amount of fiscal resources needed to support the initiative.

The development of this framework proved to be a challenging task due, in part, to the contested nature of many issues related to teacher professional development. Unresolved issues range from the definition and scope of teacher professional development to the individual cost elements that should be included in a framework such as this. The general approach taken here is to be as comprehensive and inclusive as possible with the goal of casting a broad net to capture all costs associated with teacher professional development. While this runs the risk of inflating the estimated costs of professional development, next steps that test the framework will help to further refine this tool. The goal for this step is to lay out all possible resources required to support effective teacher professional development. In the process, I take care to recognize factors that are controversial to help policy makers, planners, and researchers think through some of the difficult issues associated with the cost of teacher professional development. The contested nature of these issues underscores the significance and importance of the task.

The next section of the paper describes what constitutes professional development and what forms these activities take. The section that follows lays out the cost elements associated with teacher professional development, and draws on research that has estimated the costs of specific professional development programs to reveal what is known about various cost elements. The final section highlights directions for future work in this area.

What Does Teacher Preparation and Professional Development Look Like?

The first major challenge in thinking about the costs of professional development involves identifying what counts as teacher professional development in the first place. More conventional interpretations have tended to limit professional development to the activities that practicing teachers engage in (usually outside of the classroom) to further develop their teaching skills, learn new skills or content, and/or familiarize themselves with new education policies that affect their teaching (e.g., changes to the curriculum, new standards

and assessment programs). These activities generally require after-school time or release time during the school day for teachers to participate, and participation in some form of professional development is generally part of a teacher's contractual agreement.

More recent work acknowledges a new understanding of professional development that is far more inclusive in nature. First, professional development includes both preservice preparation of teachers as well as the inservice activities that expand the skills and knowledge base of practicing teachers. In fact, many argue that considering both preservice and inservice professional development together as a seamless process is necessary to promote the most effective and efficient system for developing teachers' skills and knowledge base.[2] Second, professional development activities extend well beyond the conventional delivery structure through which, for example, the state or district provides workshops on various topics for teachers to attend. Rather, professional development is increasingly being recognized as an ongoing series of experiences that are embedded in the collaborative work of teachers and are directly linked with outcomes and standards. This paper considers the costs of this broader understanding of professional development with respect to both preservice and inservice professional development. Attention is focused on the most promising and successful initiatives that are surfacing in this field.

Preservice Professional Development: Teacher Preparation Programs

Teacher preparation programs are the preservice component of professional development. These programs are many and varied with numerous promising innovations on the horizon. Almost all approaches include two instructional emphases: (1) instruction in an academic discipline or content area, and (2) instruction in the areas of child development and pedagogy. Further, a practical element that involves applying the content and pedagogical knowledge in a teaching context through clinical experiences and supervised student teaching is common. Traditionally, most teacher preparation programs have been university-based bachelor's degrees that include all of these elements. Recently, these programs have been criticized on multiple grounds, most notably, for the disconnect between the coursework and the practical world of teaching (NASBE, 1998). This criticism has invited a number of alternative approaches to the preparation of teachers to emerge.

For instance, extended teacher preparation programs have become more common. A number of states currently require that teachers earn a master's degree to be fully certified, so many teachers are prepared through programs that extend beyond a bachelor's degree. Some extended teacher preparation programs link a content-specific bachelor's degree with a one-year master's degree program focused on child development theories, pedagogy, and clinical teaching experiences. Others admit students from a variety of disciplines and offer a two-year teacher education master's degree.

In addition, a variety of "alternative teacher certification programs" provide aspiring teachers with non-traditional approaches to entering the profession. These programs often

[2]Given the current fragmented delivery system of preservice, induction, and inservice teacher professional development, the usefulness of this comprehensive approach is debatable. However, in an effort to be as inclusive and comprehensive as possible, I include all three stages of professional development.

target geographic areas facing substantial teacher shortages, and are sponsored by a wide variety of organizations. The programs vary in terms of requirements, length of time to complete, and availability of external support. Darling-Hammond (1990) distinguishes between alternative routes to certification, which do not change the standards but introduce other options for attaining them, and alternative certification, which changes the standards under which certification is granted. One example of an alternative avenue to teacher certification is the Pathways to Teaching Careers program, which targets individuals who are currently teaching without certification, who work as para-professionals in the schools, and who have participated in the Peace Corps and would like to become teachers. The goal of the program is to remedy teacher shortages by providing an alternative route to teacher certification. The program collaborates with colleges and universities to provide programs, including coursework and field experiences, for these groups of non-traditional teacher candidates (Rice & Brent, 2000).

A recent NASBE (1998) report describes several particularly innovative approaches to teacher preparation. One of the most publicized innovations in the teacher preparation arena is professional development schools (PDSs), which are partnerships between local school systems and universities to provide teacher preparation and inservice professional development for teachers. As described in a recent NASBE report, "Teachers and administrators work alongside university faculty and teacher preparation students to influence the development of their profession, to increase the professional relevance of their work, and to undertake mutual deliberation on issues of student learning" (NASBE, 1998, 31).

Another innovation recognized by NASBE (1998) are district-based teacher preparation programs where large urban districts recruit and train teachers locally with district staff and partnerships with local higher education institutions. In these programs, "teacher candidates spend most of their course of study working in local public schools, often receiving a stipend for their school-based work" (NASBE, 1998, 32).

Finally, policy makers interested in teacher preparation and the retention of good teachers have focused their efforts on high quality teacher induction programs that address some of the challenges faced by new teachers entering the profession.[3] These programs generally involve special provisions, such as intensive mentoring programs, periodic assessments, and ongoing targeted support for beginning teachers.

Inservice Professional Development

Echoing the heterogeneity of preservice teacher preparation programs, inservice professional development initiatives for practicing teachers are both diverse and multifaceted. This section first describes the types of activities classified as inservice professional development, and then overviews the range of administrative structures/units that provide the development experiences.

[3]Although teacher induction programs are generally recognized as a distinct phase of professional development, they are included here for the sake of fostering a more comprehensive, seamless understanding of professional development.

Types of activities.[4] The inservice professional development of practicing teachers has long taken a variety of forms. A 1998 NCES analysis of data from the Schools and Staffing Survey (SASS) identified five broadly recognized categories of professional development: (1) district-sponsored workshops or inservice programs; (2) school-sponsored workshops or inservice programs; (3) university extension or adult education programs; (4) college courses in the teacher's subject area; and (5) growth activities sponsored by professional associations. While these sorts of activities continue to characterize inservice teacher professional development, new conceptualizations of professional development have begun to emerge that involve changes along at least three dimensions: point of origination (e.g., district-mandated, school-based), content (e.g., subject-matter, pedagogy), and form (e.g., workshops, college courses) (Rice, 2000). In general, the shift involves moving from an understanding of professional development as a district-driven, transmissive process using a menu of alternative activities to an approach that emerges from local needs and interests; is relevant to the teachers, students, and school communities; and is open to a wide variety of methods (Sparks, 1995; Little, 1993; Sykes, 1996; National Foundation for the Improvement of Education, 1996).

The National Partnership for Excellence and Accountability in Teaching asserts eight research-based principles to promote high quality professional development (Hawley & Valli, 1998). Professional development should (1) be based on analyses of the differences between actual student performance and student learning goals; (2) involve teachers in the identification of what they need to learn and in the development of the learning experiences in which they will be involved; (3) be primarily school-based and built into the day-to-day work of teaching; (4) be organized around collaborative problem solving; (5) be on-going and involve follow-up and support for further learning--including support from sources external to the school that can provide necessary resources and new perspectives; (6) incorporate evaluation of multiple sources of information on student outcomes and instruction; (7) provide opportunities to gain an understanding of the theory underlying the knowledge and skills being learned; and (8) be connected to a comprehensive change process focused on improving student learning.

This change in understanding has allowed a wide array of activities to emerge as valid forms of professional development that give rise to meaningful teacher learning. These include, but are certainly not limited to, providing opportunities for collaborative problem solving, requiring legitimate long-term professional development plans for individual teachers to guide learning experiences over time, making time available for teachers to collectively and systematically discuss problems using test data, structuring meaningful mentoring relationships for new as well as veteran teachers, scheduling common planning time for teachers of the same subject area or grade level, and encouraging teacher networks. To correspond with the evolving nature of staff development, these types of activities must be generated by the teachers themselves, consistent with the long-term goals and mission of

[4]Parts of this section are drawn from a paper prepared by the author for the National Partnership for Excellence and Accountability in Teaching (Rice, 2000).

the school community, integrated into the school day, continuous with ongoing follow-up, and designed to improve the educational outcomes of the students.

In addition to the practices described above, more conventional approaches such as workshops and university courses may be aligned with the evolving conceptualization of professional development, so long as they reflect these same principles. Indeed, it would be artificial as well as inaccurate to try to categorize this diverse set of practices as conforming to either traditional or "enlightened" conceptions of what professional development is (or should be). Rather, these practices fall along a continuum where they more or less reflect the characteristics associated with newer conceptualizations of teacher professional development. This wide range of different approaches to professional development implies a wide range of possible costs associated with teacher professional development.

Administrative structure. A variety of different offices and actors are typically responsible for the administration and oversight of inservice teacher professional development (Education Commission of the States, 1997). Some researchers have recognized the authority structure as "fragmented" (Miles, et al., 1999). Included in the oversight of professional development are district professional development offices; other district offices whose primary responsibility is not professional development, but who have some secondary responsibility for professional development; state professional development offices; regional service centers; for-profit and non-profit developers and providers of models of school reform who may assume responsibility for teacher professional development; and schools themselves. Further, a variety of professional organizations and private companies (including several electronic businesses) are active in the provision of inservice professional development for teachers. Because all of these institutional units and organizations involve personnel and other resources, this complex administrative structure has direct implications for the costs of professional development (and potentially the effectiveness as well).

UNDERSTANDING THE COSTS OF PROFESSIONAL DEVELOPMENT

Some research has been conducted to estimate the costs of teacher professional development in different places, focused on specific programs, under a variety of local circumstances, and using an array of assumptions. These studies provide some sense of the costs of particular cases of professional development, and they illustrate the difficulties that arise when estimating these costs. Taken together, this body of work reveals that there exists no shared framework and no central agreement about what costs should be included in the calculation.

Though preservice and inservice teacher professional development initiatives have traditionally been recognized as separate processes (and the descriptions above reflect that differentiation), the cost structure presented in this paper encourages moving toward a more seamless approach to these two stages of professional development. Until recently, there has been little evidence of coordination, or even interaction, among these two spheres of the teacher professional development pipeline—they typically are administered by different institutions, are supported by different actors, and involve different sorts of activities. Professional development schools, however, have introduced a new approach that encourages greater levels of coordination. Arguably, a more comprehensive, seamless approach to teacher professional development could lead to greater effectiveness and a higher level of efficiency in terms of the costs and benefits of the investment. Forging a cost framework that can be applied to both stages of teacher professional development could help to promote a higher level of coordination.

The framework presented here uses a single set of cost categories to help organize the cost elements associated with both stages of professional development. This shared set of categories is intended to enable a more comprehensive understanding of and planning strategy around teacher professional development initiatives. While the cost framework is designed to be generalizable to both segments of the professional development pipeline, in practice, the activities at the preservice and inservice levels remain distinct enough that it makes sense to treat them separately for the purposes of this discussion. The four broad categories used to frame the cost elements of both preservice and inservice programs include:

1. Personnel costs
2. Facilities, materials, and equipment
3. Travel and transportation
4. Research, development, and dissemination

Table 1 illustrates specific cost elements associated with each of these categories for inservice and preservice teacher professional development. The following description of different cost elements draws on the variety of analytic frameworks used in the array of studies that have estimated the costs of teacher professional development. This section of the paper defines the parameters of each cost element and gives estimates of the range of costs cited in the existing literature. A discussion of the distribution of the cost burden follows.

TABLE 1: REPRESENTATIVE COST ELEMENTS FOR EACH COST CATEGORY: BY PRESERVICE AND INSERVICE STAGE OF PROFESSIONAL DEVELOPMENT

Cost Category	Preservice Cost Elements	Inservice Cost Elements
Personnel Costs	Instruction component • Instructors • University professors • Dedicated university personnel Field component • School teachers • School administrators • Field supervisor Induction component • Mentor teachers • School administrators • Inductee time Certification • State department officials • University certification officer	Administration: PD staff • Principals • PD supervisor • Mentor teachers • Consultants • PD instructors Participants • Additional teacher salary • Teacher donated time • Student-free periods • More personnel (subs, teachers) • Sabbaticals Future salary obligations • Additional coursework and degrees
Facilities, Materials, and Equipment	University facilities Curriculum Instructional materials Technology Books and course materials	Facility rental charges Materials Equipment Technology
Travel and Transportation	Resulting from excessive distance between university and school site	Conferences Professional meetings External trainers/speakers
Research, Development, & Dissemination	Federal/state/district data bank	Federal/state/district data bank

Note: The cost elements included in this table are representative of the kinds of costs that fall under each broad cost category for both preservice and inservice professional development. While this table presents examples of the most common cost elements, it is not fully inclusive of all possible cost elements that might arise.

Preservice Professional Development

As described above, teacher preparation initiatives (i.e., preservice professional development) take many forms. While these programs may look very different from one another, they share a common set of cost elements that must be considered as policy makers think about financing the alternative approaches.

Personnel Costs

A number of individuals participate in the administration, planning, and coordination of preservice teacher professional development. The personnel requirements are dependent on the structure of the initiative. For instance, in the case of traditional university-based teacher preparation programs, these functions are generally the responsibility of university administrators and support personnel in cooperation with state officials who oversee teacher preparation and certification. Other types of initiatives may involve a broader spectrum of actors including existing teachers and school personnel, district administrators, professional organizations, for-profit and non-profit developers, and private companies in addition to university and state personnel.

In terms of program delivery, personnel are associated with four different components of preservice teacher preparation programs: (1) instruction component, (2) field component, (3) certification component, and (4) induction component. In all cases, the time of personnel that is devoted to the teacher preparation program must be considered a cost. In some cases, personnel positions are dedicated exclusively to the teacher preparation program and their salaries reflect the personnel costs of the program. In other cases, the costs of the personnel time do not necessarily translate into additional expenditures (e.g., reallocation of existing time, additional responsibilities without additional compensation), but the time devoted to professional development activities should be considered as an opportunity cost associated with the initiative. A final consideration relates to the opportunity costs associated with the time of the student teacher participants.

Instruction component. This piece of the teacher preparation program involves the costs of all of the individuals who develop and deliver the formal coursework required in the program, including university professors, adjunct course instructors, and other staff dedicated to the teacher preparation program. In cases where PDSs are active in preservice teacher preparation, the time of district- and school-level personnel who contribute to instructional activities should also be considered. Likewise, to the degree that the school district is heavily involved with recruiting and preparing its own teaching force, district employees are likely to have time-intensive responsibilities associated with the instructional program that translate into costs.

Field component. The field component of the preservice teacher preparation program includes the time of personnel who coordinate and monitor student teaching or other clinical experiences of the students in the field. At the university level, this includes the time of the field supervisor (or other similar position). At the school level, the time of teachers and administrators who are active in the oversight of student teachers should be included. While these individuals at the school level may receive some compensation for their responsibilities

related to students' field experiences, in calculating the costs, the full value of all of their time devoted to these responsibilities should be considered.

Certification component. As teachers complete their initial preparation programs, they are typically required to be certified to teach in a particular state. Often, universities pay an individual (sometimes a professor, sometimes not) to monitor the certification process and students' progress toward meeting the requirements. This type of position has become more important with the increasingly common use of student portfolios to document what students in teacher education programs know and can do. In addition, a number of individuals at the state level are generally involved in overseeing the teacher certification process and granting certification to new teachers. All instructional and administrative personnel costs associated with the certification process should be included here.

Induction component. As new teachers enter the profession, they may receive additional support services that contribute to the overall cost of their professional development. The kinds of personnel costs likely to be associated with teacher induction programs include the time of mentor teachers as well as the time of administrators and colleagues who meet with the new teacher(s) to assess their performance and offer support and guidance where indicated. In addition, the new teachers presumably devote time to their own professional development at this stage. These time commitments may be institutionally supported through release time for mentors and inductees, and/or through additional compensation for mentor teachers and others who have additional responsibilities associated with the teacher induction program.

Time of student participants. The time that students invest in their own preparation to become teachers is an opportunity cost that warrants some attention. While this time is rarely included in analyses of teacher preparation programs, it should be recognized as a cost since it could be used in other productive ways (i.e., paid employment, other professional preparation programs)

This cost element is particularly interesting when comparing the costs of competing alternatives to teacher preparation that vary in their duration. Many teacher preparation programs involve earning a four-year bachelor' s degree. Others require students to continue on for an additional year to earn a master's degree, adding a year of tuition and subtracting a year of earning power.[5] To the degree that the additional program requirements are longer, the associated costs related to student time grow higher. While extended teacher education programs have been advocated by many, some research has suggested that the costs of extending teacher education programs outweigh the benefits (Hawley, 1987). Conversely, alternative teacher certification programs that involve only the course requirements necessary for teacher certification can be relatively low in cost.[6]

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[5]The loss of earnings is what economists refer to as "foregone earnings." This cost can be quite substantial because it includes the benefits that could be had by using those earnings in productive ways (e.g., investing the capital).

[6]Issues such as this give rise to the need for cost-effectiveness analyses of different alternatives. To the degree that the costs are lower and effectiveness is not compromised, greater efficiency is served. This is an empirical question. Goldhaber and Brewer (1999) report no difference in the achievement of students who had teachers with

Facilities, Materials, and Equipment

Preservice teacher preparation programs are typically provided by colleges and universities. Regardless of the sponsor (e.g., private providers, universities, local government), program costs include facilities used for instructional purposes, instructional materials and supplies, library and technology resources available to support the program, and books and course materials generally purchased by the students enrolled in the program.

Travel and Transportation

In contrast to ongoing inservice professional development initiatives, preservice teacher preparation programs involve limited travel and transportation costs. To the degree that students travel to the university setting for their training, costs can be incurred, but these are typically small unless the travel requirements related to the program are extensive (e.g., a long distance from the university to the school site where the student teaching will occur). Travel costs may also be related to research, development, planning, and coordination activities related to teacher preparation programs. Finally, professional development schools may involve travel and transportation costs that are more or less extensive than those associated with more traditional university-based teacher preparation programs.

Research, Development, and Dissemination

Policy makers and developers charged with responsibility of designing and implementing professional development incur a variety of costs associated with these activities, and resources must be set aside for these purposes. As teacher preparation programs increasingly reflect the kinds of recommendations made in the research on effective practices (Hawley & Valli, 1998; National Commission on Teaching and America' s Future, 1996; National Foundation for the Improvement of Education, 1996), they will become more varied and flexible to conform with the strengths and needs embedded in particular contexts (NASBE, 1998). This implies an additional need for developers and policy makers to effectively disseminate useful information and assistance that can help local practitioners make informed decisions about what types of approaches to adopt and how to effectively implement them. For instance, information systems coordinated at more macro levels (e.g., state, federal, professional associations) could be designed with the goal of providing the best, most up-to-date research on effective approaches to teacher preparation and the conditions under which these initiatives are most effective. This implies a new expanded role for these more central levels of authority in supporting local decisions about teacher preparation and professional development. These sorts of information systems can be very costly, both in terms of personnel to maintain the systems and technology to organize and disseminate the information to local decision makers.

Inservice Professional Development

Research estimating the costs of inservice professional development for practicing teachers

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regular versus alternative certification. Darling-Hammond (1990), however, argues that traditional teacher certification programs are preferable to many of the alternative approaches.

has shown that while the investments are small in terms of the percent of the annual operating budget, ranging from about two percent (Little, et al, 1987; Miller, et al., 1994) to over five percent (Moore & Hyde, 1981), they translate into significant amounts of resources. Further, many would argue that these estimates fall far short of representing the full cost of inservice professional development since they neglect important cost elements that are often associated with significant value. For instance, the uncompensated time that teachers devote to professional development activities and the contractual student-free periods that teachers have built into the school day are often not included in the cost estimates. These issues are discussed below. For now, the important point is that while we have some sense of the costs of inservice teacher professional development, we need an overarching framework that identifies the kinds of costs that are associated with these initiatives. This section describes the cost elements associated with the same four cost categories used to frame the discussion of preservice cost elements.

Personnel Costs

The costs associated with the time of personnel are, by all estimates, the most significant component of inservice teacher professional development. Moore & Hyde's (1981) study of the costs of professional development in three districts found that in all cases the largest portion of accounted-for dollars spent on staff development was devoted to the salaries and benefits of teachers and district staff (ranging from 65 to 80 percent of total reported professional development expenditures in the three districts). Likewise, Miller, et al., (1994) estimated costs associated with personnel to range between 56 and 89 percent of total costs and Elmore (1997) reported the personnel share of total professional development costs to range from 80 to 85 percent. In an effort to capture all of the personnel cost elements, the following discussion separates personnel costs into three categories: (1) professional development staff who are assigned responsibility of providing and overseeing professional development opportunities;[7] (2) participants in the professional development programs;[8] and (3) future salary obligations resulting from teachers' acquisition of additional coursework or advanced degrees.[9]

Administration: The costs of professional development staff. As described above, a variety of individuals and offices across an array of government and non-governmental organizations are involved in the provision of teacher professional development. This cost element includes the value of the time of all individuals (including federal, state, district, school, professional association, university, and business personnel) who administer and monitor professional development. While some of these individuals devote full-time to

[7]This category does not include teachers unless an identifiable portion of their assignment involves administrative activities related to professional development.

[8]The newer conceptions of professional development described earlier in the paper make it clear that teachers should be both the planners and the participants in their own professional development. To the degree that such visions emerge in practice, the distinction used here is blurred and more weight arguably falls on the participant category.

[9]There is some debate over whether this category should be considered as a cost of teacher professional development, or whether it is a general personnel cost that simply coincides with particular types of professional development. These issues will be discussed further below.

professional development planning, coordination, and administration, others may devote just a portion of their work to these activities. For instance, school-level administrators and "master teachers" might play an active role in the professional development of their colleagues that requires substantial time commitments. In general, the cost of personnel time should reflect the value of the time devoted to professional development by these different individuals, and should include both salary and benefits.

In addition, a number of people are often hired for the explicit purpose of providing professional development. These include consultants, professional development instructors, and mentors/coaches in the schools. Further, schools affiliated with comprehensive school reform models may have extra costs in this area since many of these models require that central staff be brought to the school site for periodic staff training sessions. All of these individuals are associated with costs that must be considered.

Participants: The costs of teacher time. The time that teachers devote to their own professional development is a serious consideration in calculating the costs of these activities and initiatives. The costs associated with teacher time can be quite sizeable, particularly as schools move toward more progressive visions of professional development that involve teachers in the planning and delivery of more collaborative and job-embedded professional development activities (Rice, 2000).

As described earlier, empirical work has generated a set of estimates reflecting the fiscal costs of professional development in certain places and under particular circumstances. However, far less emphasis has been placed on estimating the donated resources that aren't reflected in budgetary expenditures, but are needed to support the professional development activities and programs.[10] Specifically, while the donated time of teachers has been shown to be an important factor accounting for almost 40 percent of the total investment (time and money) in professional development (Little et al., 1987), few studies have addressed this issue as an important cost dimension. Further, the trends in professional development suggest an even greater reliance on this input in the future. Most of the practices associated with the emerging theory of teacher professional development require greater time commitments on the part of teachers. The costs of this additional time can take at least four forms.[11] While the first two require no additional expenditures, they are still costs in the sense that they use resources that could be used in other productive ways.

First, the increase in time commitments can add to the estimated 40 percent of the total cost already donated by teachers. In other words, teachers could be expected to give more of their own time to their own professional development.[12] However, if donated time is not forthcoming from these individuals or from others who can create such time for them, acquiring this time may require a significant monetary cost in the form of additional salaries

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[10]Exceptions include analyses in California by Little, et al. (1987) and Stern, et al. (1989).

[11]Because the opportunity costs of a set amount of teacher time would presumably not vary across these different strategies, these factors relate more to the distribution of the cost burden (e.g., expenditures versus teachers' donated time).

[12]Some of this seemingly donated time may actually be compensated. For example, in systems where teachers receive bonuses when students achieve certain standards, teachers may choose to "donate" time to professional development activities designed to improve the likelihood they will receive a bonus.

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and benefits. Currently, about half (48 percent) of all teachers report getting release time to support their professional development (NCES, 1998).

Second, time for teacher professional development activities could be found in other places in the school day or school year. Proposals here range from reallocating uses of existing time (National Foundation for the Improvement of Education, 1996) to completely restructuring how time is used in schools (National Education Commission on Time and Learning, 1994) to find more time for teachers to plan and participate in professional development activities. Researchers have acknowledged student-free periods within the regular school day as potentially valuable time for teacher professional development (Miles, et al., 1999). Most school systems have contractual arrangements with teachers that require student-free periods. While these periods may not be recognized as professional development time, they could be a focal point for finding time within the school day to accommodate professional development. For example, traditional planning periods could be restructured in ways that allow teachers of the same subject or grade level to come together to plan collaboratively, as well as identify areas where further assistance and professional development might be needed to meet the educational goals of the school.

Third, the greater time demands could translate into higher educational expenditures to compensate teachers for the additional time. One option for creating more time to support teacher professional development made by the National Foundation for the Improvement of Education (1996) is to make new time available by lengthening the work year (or the work day). Clearly, this has financial implications. For instance, consider a state education system employing 75,000 teachers. A policy to lengthen the school year by even five days could translate into a statewide cost of almost $100 million statewide per year (assuming annual salary and benefits equal to $50,000/teacher and depending on district-teacher negotiations).

Finally, additional personnel could be hired to provide greater slack during the school day for teacher professional development activities while maintaining current class sizes. Schools often accomplish this by hiring substitute teachers to cover classes for those pulled away for professional development. Given that the costs of substitute teachers are sizeable (Stern et al., 1989), other options should also be considered. For instance, more full-time teachers could be hired. This "overstaffing" of schools would avoid the use of substitutes on a regular basis to provide time for teacher professional development while keeping class sizes stable. Additional sources of support for the time requirements of the new forms of professional development include teacher aides, parent volunteers, and other members of the broader school community. These individuals could also provide the slack time needed to create professional development time opportunities for teachers. However, it is important to be certain that under any of these arrangements, students don't pay through lost learning opportunities (an important opportunity cost that could be associated with these new forms of professional development if great care is not taken).

Failure of policy makers to consider the high demand on teacher time may result in the failure of the professional development reform altogether. Professional development initiatives that assume a high level of donated teacher time when it is not readily forthcoming

have little chance of succeeding. A corollary to these issues related to teacher time involves the time of school building administrators. Under newer conceptualizations of professional development, principals assume greater responsibilities for leadership, management, implementation, evaluation, and continuous follow-up of teacher professional development activities. All of these responsibilities require time and have implications for cost.

Future salary obligations.[13] Additional credits earned by practicing teachers through graduate coursework are generally rewarded in the salary schedules of school systems. In their study of the costs of teacher professional development in California, Little, et al. (1987) report that the additional salary commitments that teachers earn through university course credits amounted to almost $600 million annually, equaling 160 percent of the direct costs of professional development in that state. When included in the analysis, this category represents the taxpayers' largest investment in teacher professional development. Ross's (1995) analysis of teacher development and salary incentives in Los Angeles reports that salary credits (i.e., the transfer of professional development credits into higher salaries) are a powerful incentive to encourage teachers' participation in inservice professional development, and that such incentives could be used more effectively to promote higher levels of student performance. Others have argued that future salary obligations should not factor into estimates of the cost of professional development, but should be considered as a routine personnel cost (rather than a training cost).

Given the high cost associated with future salary obligations, careful attention should be paid to the appropriateness of including this as a cost element of teacher professional development. One way of resolving this issue lies in determining whether the additional salary increments are design elements of the school system's professional development policy or part of routine human capital development apparent in education and business sectors. Consider the first possibility—that the future salary obligations are a design element of professional development policies intended to promote certain desirable behaviors. In other words, professional development policies could be designed in such a way that additional salary increments serve as a mechanism used by school system administrators to encourage teachers to engage in certain types of professional development, to do this at particular stages of their careers, and to achieve certain levels of performance. The award of the salary increments is dependent on teachers meeting these kinds of criteria. Since this approach could be viewed as an alternative to "pay-up-front" approaches (e.g., providing teachers with stipends and/or paying for their tuition), not including future salary obligations as a cost of professional development could seriously distort the cost estimates, favoring districts that rely on these kinds of salary incentives in their professional development programs.

On the other hand, the future salary obligations associated with teachers' participation in professional development could be viewed as a routine investment in human capital. From this perspective, upgrading skills through professional development (as is routinely done in many professions) leads to higher levels of productivity. The employer rewards the

[13]Randy Ross and David Monk were instrumental in helping me think through the complexities associated with future salary obligations as a cost of teacher professional development.

increase in employee productivity though salary hikes. The increase in productivity realized by the firm (or school system in this case) presumably outweighs the additional salary payments made to the employees. In sum, participation in professional development leads to greater productivity, which is subsequently reflected in salary increases. Since the salary increases are a reflection of greater productivity, it wouldn't make sense to include them as a cost of professional development. Although viewing professional development this way is a plausible approach, it is complicated in education by the questionable causal relationship between participation in professional development and subsequent productivity.

Facilities, Materials, and Equipment

As described above, inservice professional development includes many different programs, initiatives, strategies, and activities. All require materials, equipment, and facilities. In some cases, the fiscal costs of these resources can be quite sizeable. For example, a full-day retreat could involve rent charges for a facility, as well as extensive materials for the various activities. In other cases, these resources may not translate into additional expenditures. For instance, to the degree that the professional development experiences are integrated into the regular school day, one would not expect much in the way of additional expenditures related to facilities. However, materials and equipment may still factor in as additional costs.

The increasing role of technology in the provision of inservice teacher professional development warrants particular attention. Internet-based professional development modules and telecommunications offer important opportunities as alternative delivery systems. While these strategies are largely untested in terms of their use and impact, they have potentially important implications for cost, particularly over the long-term.

Travel and Transportation

While travel and transportation costs are rarely associated with on-site professional development activities, certain types of professional development opportunities do require extensive costs in these areas. For example, conferences and professional meetings often gather educators from across a broad region, or even across the nation. These sorts of learning opportunities to exchange ideas with others come with a travel cost that includes transportation, lodging, and meals. Clearly the cost grows proportionately with the number of people who attend these sorts of meetings. To the degree that these interactions are possible through telecommunications, the travel and transportation costs may decrease. On-site professional development activities that involve presentations by outside individuals may involve costs for their travel and transportation. These kinds of costs are often associated with professional development for models of reform like Success for All, the School Development Program, or the Accelerated Schools since these programs require coordination and consistency across sites. From a development perspective, travel costs may also be related to the research and design activities related to inservice teacher professional development programs in order to allow for participant input and site observation. Finally, administration, planning, and coordination activities may also involve some travel and transportation costs.

Research, Development, and Dissemination

As with preservice teacher professional development, the ongoing research and development of professional development activities for practicing teachers is an essential area for continued investment. Further, the emerging research on promising directions of inservice professional development of practicing teachers suggests that these opportunities should allow flexibility for local schools to determine what they need to strengthen their knowledge and skills in ways that will translate into improved student performance. This flexibility implies a new responsibility for districts, states, professional associations, and others outside of schools to assume in terms of maintaining and disseminating research-based information and assistance on "best practices" related to professional development in different educational contexts.

Distribution of the Cost Burden

Support for teacher professional development comes from a variety of sources. These include federally-sponsored programs, state education systems, school districts, schools, teachers and teacher candidates, professional associations, colleges and universities, and a variety of external sources. Support from all sources (whether captured in budgets or not) must be included in estimates of the total costs of professional development.

Assessing the distribution of the cost burden is an important step in understanding the full cost of the initiative and how that cost is shared by various individuals and organizations. The case of tuition and fees for preservice and inservice professional development provides a good example of how cost burdens can be shared and shifted. Tuition and fees can be viewed as a source of revenue used to purchase program-related components like personnel, transportation, equipment, and materials. While the costs of tuition and fees are generally shouldered by the students themselves, some public policy initiatives shift this cost burden to others. For instance, loan forgiveness programs designed to attract prospective teachers into the profession shift the burden of repaying student education loans from the student to some level of government (generally the state or federal government). Another example is district-sponsored teacher preparation programs designed to recruit and prepare teachers for service in large, urban areas lacking an adequate supply of high quality educators. These programs often cover the cost of coursework associated with the teacher preparation program (e.g., by providing the courses themselves at no expense to the student, or paying university tuition for program requirements). Further, many of these districts pay students salaries or stipends for their ongoing service in the schools throughout the course of the professional development program. Such compensation can be seen as offsetting the costs of the participant time invested in the preparation program (discussed above in section on Personnel Costs). Understanding how the cost burden is distributed across individuals and organizations can be critical for local decision makers as they design, plan, and implement teacher professional development initiatives that fit with the resources and needs of their local communities.

DIRECTIONS FOR FUTURE WORK

The previous section described the wide array of cost elements associated with preservice and inservice teacher professional development. The discussion gives rise to a number of issues in need of further consideration, mapping the way for future work in this area. I outline five possible next steps below.

Expanding the Cost Framework to Other Educators

A first step is to expand the framework beyond the current focus on teachers to capture the costs of professional development for all educators. While many of the professional development activities of administrators and others are likely to be the same as those for teachers, particularly as the field moves toward more innovative and integrated approaches, the current system involves some very different processes. For instance, while teachers have many peer colleagues within the school, principals must look to other sites to interact with their peers. This has implications for how professional development activities for the different positions are structured. While the framework outlining cost elements for teacher preparation and professional development is likely to apply to other sorts of education positions including principals, counselors, and other school personnel, this issue should be more directly examined.

Making the Cost Framework More Seamless

The framework developed in this paper emphasizes the seamless nature of preservice and inservice professional development. However, current practice typically separates these two phases into distinct processes that are rarely considered together. As a result the explanation of the framework, and the examples provided, are presented in separate sections of the paper. More attention should be given to how to convey the need to recognize the professional development process as seamless and comprehensive in nature. While this isn't expected to alter the framework (which was designed to apply to both levels of teacher professional development), it encourages additional thought be devoted to how to best emphasize a seamless system when that isn't what really exists in practice today.

Applying the Cost Framework

A third issue is the need to apply the framework to specific initiatives to test and further clarify it. In particular, this paper describes a number of cost elements that need additional consideration. For instance, the inclusion of future salary obligations as a cost of professional development has been questioned. Similarly, how to best handle the cost of time that teacher candidates invest in their preparation programs needs further attention. Using the framework to consider costs of particular approaches has a two-fold contribution: (1) it will help to clarify and decide about some of the more ambiguous and controversial cost elements currently included in the framework, and (2) it is a good starting point for acquiring better information on the costs of different approaches to professional development.

Exploring Economic Trade-offs

In addition to estimating the costs of teacher professional development, investigating the economic trade-offs associated with different approaches to professional development is a pressing issue. As described above, a diverse set of approaches characterizes preservice and inservice teacher professional development, and new innovations continue to emerge. The cost elements outlined in this paper can serve as a framework for estimating the costs of different, sometimes competing, approaches to the professional development of teachers. Reaching a better, more comprehensive understanding of the costs associated with these approaches allows decision makers to recognize the array of resources devoted to teacher professional development, and even compare the resource requirements of alternative approaches. In addition, more sophisticated analyses are needed to weigh the trade-offs embedded in policy choices related to the design of teacher professional development. In other words, there are many competing approaches to the professional development of educators, and policy makers need to think hard about which make the most sense in terms of resource allocation decisions.

The focus of this type of investigation could range from broad models or programs of professional development (e.g., professional development schools vs. more traditional approaches) to discrete practices that support professional development (e.g., substitute teachers vs. overstaffing schools with more regular teachers). Regardless of how the analysis is focused, the emphasis would be on the economic trade-offs (costs and effects) associated with the designated alternatives. This type of project presents a number of serious challenges. One involves the specification of the alternatives to be compared. Another relates to the difficulty of capturing and measuring all of the costs and effects around the different approaches or initiatives.[14] This piece of work could take one of two forms: (1) a very focused, long-term, data-driven investigation, or (2) a broader, shorter-term, more conceptual exploration of the kinds of trade-offs that exist and how to think about them in constructive ways.

Comparing Professional Development Investments With Other Fields

Finally, the costs of teacher professional development should be compared with the professional development costs associated with other fields (e.g., social workers, nurses, and employees of large private corporations). A comparative analysis such as this would help to gauge investment levels across different professions and sectors of the economy. Further, it is likely that lessons from other fields could be applied to education in terms of strategies for designing, funding, and implementing effective professional development.

[14]Evaluating the effectiveness of teacher professional development presents serious challenges. Possible indicators include participation/seat time, the ability of the teacher to successfully use the instructional/management strategies taught in the professional development experience, and eventual student achievement resulting from participation in professional development.

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- Planning and implementation of **comprehensive welfare and workforce development reforms**; and
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